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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.         | CONFIRMATION NO.       |
|--|-------------|----------------------|-----------------------------|------------------------|
| 10/528,154   | 07/21/2005  | Hiroyuki Sakamoto    | 21581-00337-US1             | 6527                   |
| 30678 7590 12/11/2007<br>CONNOLLY BOVE LODGE & HUTZ LLP<br>1875 EYE STREET, N.W.<br>SUITE 1100<br>WASHINGTON, DC 20036 |             |                      | EXAMINER<br>MCNALLY, DANIEL |                        |
|  |             |                      | ART UNIT<br>1791            | PAPER NUMBER           |
|  |             |                      | MAIL DATE<br>12/11/2007     | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/528,154 | <b>Applicant(s)</b><br>SAKAMOTO ET AL. |  |
|                              | <b>Examiner</b><br>Daniel McNally    | <b>Art Unit</b><br>1791                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 14-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/15/2005</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-12 and 14-20 in the reply filed on 11/19/2007 is acknowledged.
2. Claim 13 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/19/2007.

### ***Claim Objections***

3. Claims 3 and 14 are objected to because of the following informalities:  
Claim 3 appears to include a typographical error in "bond-containing gone," the word "gone" should be replaced with --one--.

Claim 14 appears to include a typographical error and "bon-containing gone," should be replaced with --bond-containing one--.

Claims 6 and 20 are duplicate claims. It is recommended cancelling claim 20.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 1-12 and 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the step (1)" and "the step (2)" in lines 2 and 4 respectively. There is insufficient antecedent basis for this limitation in the claim. It is recommended replacing "the" with --a-- in both instances.

Claim 2 recites the limitation "the step of heating for curing" in line 3. There is insufficient antecedent basis for this limitation in the claim. It is recommended amending claim 2 to depend from claim 11 or actively recite a heating for curing step in the method.

Claim 4 recites the limitations "the formation" "the electrode reaction" and "the curing reaction" in lines 3, 4 and 5 respectively. There is insufficient antecedent basis for this limitation in the claim. It is recommended the applicant actively requires a formation, an electrode reaction and a curing reaction.

Claim 9 recites the limitation "the epoxy resin" in line 3. There is insufficient antecedent basis for this limitation in the claim. It is recommended amending claim 9 to depend from claim 8.

Claim 15 recites the limitations "the formation" "the electrode reaction" and "the curing reaction" in lines 2, 3, and 4 respectively. There is insufficient antecedent basis for this limitation in the claim. It is recommended the applicant actively requires a formation, an electrode reaction and a curing reaction.

Claim 16 recites the limitations "the formation" "the electrode reaction" and "the curing reaction" in lines 2, 3, and 4 respectively. There is insufficient antecedent basis for this limitation in the claim. It is recommended the applicant actively requires a formation, an electrode reaction and a curing reaction.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-12 and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. [US4781969] in view of Kadokura [US5676812] (previously cited) and Sakamoto et al. [US6262146].

Kobayashi discloses a flexible printed circuit board. The flexible printed circuit board is formed by adhesively bonding conductive layers (6,6) with adhesive layers (3,3) to a dielectric layer (2) (column 2, lines 24-33). The conductive layers comprise a metal material. The dielectric layer is a functional material. Kobayashi does not disclose the adhesive as a cationic electrodepositable adhesive that is formed on the conductive metal layer by electrodeposition.

Kadokura discloses a method of making a laminate. The method of Kadokura comprises applying an adhesive coating to a conductive metal layer by electrodeposition. Kadokura disclose by electrodepositing the adhesive, the adhesive can be more densely and uniformly applied to the conductive metal layer (column 2, lines 51-59).

Sakamoto discloses a method of electrodepositing a cationic resin composition onto a conductive metal substrate. Sakamoto discloses using cationic electrodepositing

in order to better control the thickness of the cationic resin and because of the excellent throwing power and improved impact resistance

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Kobayashi by electrodepositing a cationic resin onto the surface of the conductive metal layer as taught by Kadokura and Sakamoto in order to increase the density of the adhesive layer and to thickness of the adhesive layer to ensure a uniform thickness.

With regard to claim 2, Sakamoto discloses the cationic adhesive composition is water based and baked to cure. Because the adhesive is water based, there are no volatile components in the solvent to be generated.

With regard to claim 3 and 14, Sakamoto discloses the composition of the cationic adhesive comprises an aliphatic hydrocarbon group which contains unsaturated double bonds within its chain.

With regard to claims 4, 15 and 16, Sakamoto discloses the composition of the cationic adhesive allows the formation of chemical species activated by an electrode reaction caused by a voltage application during the electrodeposition.

With regard to claims 5, 17, 18 and 19, Sakamoto discloses the composition of the cationic adhesive comprises sulfonium groups and propargyl groups.

With regard to claims 6 and 20, Sakamoto discloses the composition has a sulfonium group content of 5 to 400 millimoles, a propargyl content of 10 to 315 millimoles and a total content not more than 500 millimoles per 100g of solid.

With regard to claims 7, Sakamoto discloses the composition has a sulfonium group content of 5-250 millimoles, a propargyl content of 20-295 millimoles and a total content not more than 400 millimoles per 100g of solid.

With regard to claim 8, Sakamoto discloses the composition has an epoxy resin skeleton.

With regard to claim 9, Sakamoto discloses the epoxy resin comprises novolak phenol epoxy resin or novolak cresol epoxy resin in an average molecular weight of 500 to 20,000.

With regard to claim 10, Sakamoto discloses the cationic resin can be left wet or dried by heating before any further materials are applied to the resin.

With regard to claim 11, Sakamoto and Kadokura disclose applying heat to the laminate during adhesion and to apply heat to the cationic resin to cure the resin.

With regard to claim 12, Kobayashi discloses the dielectric material as an organic material.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel McNally whose telephone number is (571) 272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Daniel McNally  
Examiner  
Art Unit 1791

  
JEFF H. AFTERGUT  
PRIMARY EXAMINER  
GROUP 1300

/DPM/  
December 6, 2007